Program Charter

For

Local Forecasts and Warnings

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1. EXECUTIVE SUMMARY

The Local Forecasts and Warning (LFW) Program encompasses many of NOAA's most critical operations focused on protecting lives and livelihoods. The program delivers essential NOAA services, especially those related to high-impact events, to local communities through its distributed structure of field offices and national centers.

LFW's functional components include elements of the end-to-end forecast and warning process: observe the atmosphere; produce numerical forecast guidance; synthesize environmental information; make forecast and warning decisions; and provide information and decision assistance. Effectiveness of this process depends on professional development and training of personnel, integration of the latest science and technology, efficient service delivery, and outreach focused on preparedness and situational awareness. Other essential components of LFW are management of daily operations, assessment of performance, and enhancement of human capital (i.e., training). The result is a program which puts NOAA close to its customers, provides essential environmental services, and provides a cornerstone for hazard resilience in communities across the nation. See Appendix B for more information on LFW Capabilities.

The United States is one of the most natural hazard prone areas on the globe. In an average year, U.S. residents face a spectrum of high-impact, environmental hazards which include tornadoes, hurricanes, large hail, damaging wind, lightning, winter storms, floods, wildfires, poor air quality, and drought. In addition, weather and water information is often critical to the proper management of human induced high-impact events, such as train derailments, industrial plant accidents, and acts of terrorism. Between 1980 and 2007, 78 weather and water related disasters exceeded $1 billion per event (source: NOAA/NCDC).

The LFW program resides in NOAA's Weather and Water Mission Goal, but due to the nature of its service delivery and outreach activities, it touches all other mission goals. Offices within the LFW program span the Nation and consist of: 122 Weather Forecast Offices (WFOs), 19 Weather Service Offices (WSOs), two Data Collection Offices (DCOs), and four national centers from the National Centers for Environmental Prediction (NCEP). Regional management oversight is provided by six National Weather Service regional headquarters. World-wide acquisition and delivery of weather and water data and information is accomplished by the Telecommunications Operations Center (TOC), the Master Ground Station, and the Network Control Facility.

NOAA is the sole U.S. government authority for issuing official weather and water warnings for life-threatening events and holds a key role in the nation's disaster response plan. The benefits of NOAA's forecast and warning services are tremendous. For example, our forecasts, warnings, and the associated emergency responses result in a $3 billion savings in a typical hurricane season by enabling citizens to prepare their property for the hurricane threat, and to get out of harm's way in time. However, despite the thousands of warnings NWS forecasters will issue this year, nearly 600 Americans will, on average, lose their lives in weather-related events. NOAA's LFW program must continue to improve in the forecasting of high impact events to meet the demands of an increasingly sophisticated society, in terms of their expectations for information content, flow, and delivery. Advanced warning is beneficial only if it leads to a public response that moves people out of harm's way and provides time to protect their property.

NOAA has made extraordinary advances in providing decision-makers with the lead time needed to respond to an impending high impact event. Outlooks for winter storms, extreme temperature events, fire danger, and flooding are issued days in advance. Specific storm-based warnings of severe thunderstorms and tornadoes provide lead time needed so people can take protective action. However, this has come at a cost of high false alarm rates, which can affect the willingness of the public to react to a warning. For example, when a tornado warning is issued, a tornado actually occurs only about 20% of the time. Unnecessary evacuations or sheltering can have tremendous economic costs as well.

LFW intends to meet this challenge by working with NOAA's research and development programs to transition new scientific and technical capabilities into operations to improve the predictability of the onset, duration, and impact of extreme weather and water events and better communicate the degree of certainty of these events with increased lead time. The annual value of improving daily weather forecasts in terms of accuracy, geographic detail, and frequency of updates was found to be $1.73 billion per year. The value of improving our forecasts and warnings of high impact events is at least an order of magnitude higher.

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2. PROGRAM REQUIREMENTS

A. Requirement Drivers:

1) National Weather Service Organic Act, 15 U.S.C. § 313 - Directs National Weather Service to forecast the weather, issue storm warnings, collect and transmit marine intelligence for the benefit of commerce and navigation, report temperature and rainfall conditions, and take such meteorological observations as may be necessary to establish and record the climate conditions of the United States.

a) § 313a – requires the establishment of meteorological observation stations in the Arctic region.

b) § 313b - requires NOAA to establish the Institute for Aviation Weather Prediction to provide forecasts, weather warnings, and other weather services to the United States aviation community.

2) Inland Flood Forecasting and Warning System Act of 2002, 15 U.S.C. § 313c, Pub. L. 107-253, Oct. 29, 2002, 116 Stat. 1731 - Authorizes NOAA, through the United States Weather Research Program, to conduct research and development, training, and outreach activities relating to inland flood forecasting improvement, and for other purposes.

3) National Response Plan, Department of Homeland Security (March 22, 2008), http://www.dhs.gov/xlibrary/assets/NRPbaseplan.pdf - Uses the foundation provided by the Homeland Security Act, HSPD-5 and the Stafford Act to provide an all hazard approach to incident management. It tasks the Department of Commerce and NOAA with acquiring and disseminating weather data, forecasts, and emergency information.

4) Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1251 et seq. - The principle statute governing water quality with the goal is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA regulates both the direct and indirect discharge of pollutants into the Nation's waters and prohibits the discharge into navigable waters of any pollutant by any person from a point source unless it is in compliance with a National Pollution Discharge Elimination System (NPDES) permit.

5) National Oceanic and Atmospheric Administration Policy on Partnerships in the Provision of Environmental Information (NOAA Partnership Policy), as amended (effective Dec. 1, 2004). - The policy responds to recommendations contained in both the National Research Council's (NRC) study, "Fair Weather: Effective Partnerships in

Weather and Climate Services," (National Academy Press, 2003), and extensive public comments on a proposed policy. The NRC study identified the need for a policy that would recognize advances in technology, as well as the enactment of relevant laws and implementing guidance, particularly the Paperwork Reduction Act of 1995, 44 U.S.C. Part 45, and OMB Circular No. A-130, "Management of Federal Information Resources," 61 Fed. Reg. 6428 (February 20, 1996), which were promulgated subsequent to a previous National Weather Service (NWS) policy issued in 1991. See, 56 Fed. Reg. 1984, (January 18, 1991).

6) OMB Circular No. A-130, "Management of Federal Information Resources," 61 Fed. Reg. 6428 (February 20, 1996), as revised. - Establishes policy for the management of Federal information resources. OMB includes procedural and analytic guidelines for implementing specific aspects of these policies as appendices.

7) 5 U.S.C., “Government Organization and Employees,” Part III, Subpart C, Chapter 41. – Planned training should be provided to employees to support the agency’s strategic plan, to improve employees’ current job performance, and to retrain employees to enhance skills in the current position.

B. Mission Requirements

1) Take the necessary atmosphere and land surface observations for forecasting weather and water events, issuing warnings for extreme events, and recording the nation’s climate conditions as outlined in the Organic Act.

2) Produce local forecasts and warnings for weather and water events and for the impact of these events on technological hazards as outlined in the Organic Act and the National Response Plan.

3) Disseminate critical forecasts and warnings to the public and LFW’s partners while making available environmental information in an open and unrestricted manner as outlined in OMB circular A-130 and the NOAA Partnership Policy.

3. LINKS TO THE NOAA STRATEGIC PLAN

A. Goal Outcomes:

1) Reduced loss of life, injury, and damage to the economy

2) Better, quicker, and more valuable weather and water information to support improved decisions

3) Increased customer satisfaction with weather and water information and services.

B. Goal Performance Objectives:

1) Increased lead time and accuracy for weather and water warnings and forecasts.

2) Improved predictability of the onset, duration, and impact of hazardous and severe weather and water events

3) Increased application and accessibility of weather and water information as the foundation for creating and leveraging public (i.e., Federal, state, local, tribal), private, and academic partnerships.

4) Increased coordination of weather and water information and services with integration of local, regional, and global observation systems.

5) Reduced uncertainty associated with weather and water decision tools and assessments.

6) Enhanced environmental literacy and improved understanding, value, and use of weather and water information and services.

C. Goal Strategies:

1) Improving the reliability, lead-time, and effectiveness of weather and water information and services that predict changes in environmental conditions

2) Integrating an information enterprise that incorporates all states from research to delivery, seeks better coordination of employee skills and training, and engages customers.

3) Developing and infuse research results and new technologies more efficiently to improve products and services.

4) Working with private industry, universities, and national and international agencies to create and leverage partnerships that foster more effective information services.

5) Building a broad-based and coordinated education and outreach program by engaging individuals in continuous learning toward a greater understanding of the impacts of weather and water on their lives.

6) Employing scientific and emerging technological capabilities to advance decision-support services and educate stakeholders.

4. PROGRAM OUTCOMES

A. Reduce lives lost to extreme weather and water events by providing improved forecasts and warnings

B. Keep property damage from increasing at exponential rates through environmental information leading to better response decisions, building codes, and land use planning.

C. Reduce number of people and businesses affected by extreme events through reductions in forecast uncertainties.

D. Enable weather and water information providers and weather sensitive businesses to reach their full potential by continuously improving the accuracy and timeliness of environmental information.

E. Enable society to live in harmony with the environment, and be resilient to natural hazards through information supporting environmental stewardship and extreme event mitigation.

5. ROLES AND RESPONSIBILITIES.

This program is established and managed with the procedures established in the NOAA Business Operations Manual (BOM). Responsibilities of the Program Manager are described in the BOM. Responsibilities of other major participants are summarized below.

A. Participating Line Office Responsibilities

1) National Weather Service (NWS) is responsible for the overall execution of the Local Forecast and Warning Program.

2) National Satellite, Data, and Information Service (NESDIS) provides satellite data for the forecast process and archives our observations and forecasts.

3) Office of Oceanic and Atmospheric Research (OAR) conducts research leading toward breakthrough forecast and warning capabilities

4) NOAA Marine and Aircraft Operations (NMAO) provides aircraft time for observations supporting predictions and maintenance in remote areas, and ship time for servicing DART buoys.

5) National Marine Fisheries Service provides information on fisheries for dissemination through LFW's field infrastructure.

6) National Ocean Service provides port specific forecasts of tides and currents as well as algal bloom forecasts for dissemination by LFW's field infrastructure.

7) Chief Information Officer (CIO) provides guidance on enterprise architecture.

8) Acquisition and Grants provides assistance in ensuring all grants are awarded on time.

9) Legislative Affairs provides assistance on responding to congressional inquiries and briefings to Members of Congress.

10) Public, Constituent, and Intergovernmental Affairs provides assistance in developing preparedness materials and for securing Presidential declarations for national preparedness campaigns.

11) The NOAA Office of General Counsel (GC) is responsible for providing legal services necessary to enable the program to discharge its duties. In this regard, NOAA GC provides a variety of specific services on an as-needed basis, including but not limited to: advice on legal issues related to program responsibilities; review and clearance of agreements, testimony, correspondence, and other documents; legal representation; assistance with litigation and requests for testimony or information; and coordination on behalf of the program with the Department of Commerce GC in the areas of contract, grant, intellectual property, labor and employment, appropriations, legislation and regulation, grant, litigation, and telecommunications law.

12) CFO receives routine reports on the program, as well as certain projects and components, to assess execution success.

13) CIO Council Committee reviews IT proposals to ensure they meet sound investment methodologies.

14) Platform Allocation Council reviews proposals for aircraft and ship use including prioritization of assets.

15) Facilities Committee provides guidance as well as prioritization of facilities acquisition, maintenance, and disposition.

16) Grants Committee ensures grants process operates efficiently

17) Other Councils and Committees supporting LFW include; International Affairs, Minority Serving Institutions, Diversity Council, EEO Council, Corporate Training Council, Education Council, National Oceanographic Partnership Program, Leadership Committee, Human Resource Committee, and Environmental Compliance Committee.

B. External Agency/Organization Responsibilities

1) Department of Defense – The Air Force, Navy, and Army use NOAA Local Forecasts and Warning services. The Air Force backs up NOAA's Storm Prediction Center.

2) U.S. Coast Guard – Partners with NOAA for marine safety and broadcasts marine forecasts.

3) Federal Aviation Administration (FAA) – The FAA is NOAA's major customer for aviation forecasts. They also ensure NOAA forecasts get to pilots.

4) Department of Homeland Security (DHS) – NOAA provides daily information on extreme weather, water, and climate events to their operations center to support homeland security. DHS partners with NOAA on Homeland Security preparedness activities. NOAA is major contributor to the National Response Plan coordinating the work of 27 agencies during and after disasters.

5) Federal Emergency Management Agency (FEMA) - partners with NOAA for promoting weather safety and weather preparedness. Collaborates in development of NOAA/FEMA training courses for emergency managers. Founding partner in National

Disaster Education Coalition.

6) Federal Land Management Agencies (USDA) Forest Service, Department of Interior (DOI) Bureau of Land Management, DOI U.S. Fish and Wildlife, DOI National Park Service, DOI Bureau of Indian Affairs) and the state/county fire agencies (e.g., California Department of Forestry) - partners with NOAA for wild fire safety and suppression.

7) Environmental Protection Agency (EPA) - partners with NOAA to create the "Sun Wise Program" to promote Ultra Violet (UV) safety awareness in public schools, UV Alerts, Air Quality Forecast System, and Heat Health Warning System.

8) US Department of Agriculture (USDA) - provides grant funding to install new NOAA Weather Radio transmitters in rural areas across the country.

9) National Centers for Disease Control and Prevention (NCDCP) – National Disaster Education Coalition (NDEC) partner and supporter of the new wind chill. NDEC promotes consistent science and safety messages for all environmental and technological hazards through jointly published safety publications. The Coalition started with NOAA, the American Red Cross, and FEMA. It has expanded with the addition of the following: National Fire Protection Association; U.S. Geological Survey; Institute for Business and Home Safety; Home Safety Council; National Cable and Telecommunications Association; Food and Drug Administration Center for Food Safety and Applied Nutrition; U.S. Fire Administration; Centers for Disease Control and Prevention; Consumer Product Safety Commission; International Association of Emergency Managers; the U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service; and a representative from the National Science Foundation.

10) United States Army Corps of Engineers (USACE) – partners with NOAA for dam safety programs and post storm data acquisition activities.

11) United States Geological Survey (USGS) – partners with NOAA for real-time stream gage data, historical records, and other water information. The USGS is also a member of NDEC.

12) United States Bureau of Reclamation (USBR) – partners with NOAA to develop Emergency Action Plans for large reservoirs in the western United States. USBR meteorologists also collaborate with NOAA to add value to existing and emerging forecast products, including water supply forecasts.

13) Federal Energy Regulatory Commission (FERC) – assists with the development of Emergency Action Plans for dams in the United States. FERC sets safety guidelines for the security of dams and reservoirs.

14) Hurricane Liaison Team (HLT) - comprised of FEMA/NOAA personnel who are temporarily assigned to NOAA's Tropical Prediction Center during significant hurricanes to ensure proper coordination of warnings and forecasts between NOAA, FEMA, and the emergency management community.

15) American Red Cross (ARC) - partners with NOAA to produce weather safety pamphlets/publications and to promote all hazards safety. Founding partner in National Disaster Education Coalition.

16) National Safety Council (NSC) – partnered with NOAA to produce the “Water Predictions for Life Decisions” Advanced Hydrologic Prediction Service (AHPS) brochure. In addition, the NSC is involved with other NOAA weather safety programs.

17) International Association of Emergency Managers (IAEM) - provides feedback to NOAA on proposed products and services. IAEM has a representative on the NOAA National

StormReady Advisory Board to suggest program improvements from the local emergency management perspective. IAEM promotes collaboration between local and county level emergency managers and NOAA.

18) National Emergency Management Association (NEMA) - provides feedback on proposed products and services. NEMA has a representative on the NOAA's National StormReady Advisory Board to suggest program improvements from the state level emergency management perspective. NEMA promotes collaboration between state emergency management and NOAA.

19) State and Local Emergency Managers – partner with NOAA in the warning process by disseminating NOAA warnings and directing appropriate response actions, such as evacuations. They also assist in preparedness activities and in defining future NOAA services.

20) The Media – partner with NOAA in disseminating critical weather information and in conducting preparedness activities.

21) United States Coast Guard Auxiliary and the United States Power Squadrons – partner with NOAA for boating safety.

22) Commercial Weather Services Association – represents the value added weather providers and provides feedback on NOAA service improvement actions.

23) Air and Waste Management Association – partners with NOAA for air quality studies.

24) International Society of Biometeorology (ISB) – partnered with NOAA for the universal thermal comfort index.

25) Institute for Business and Home Safety – member of NDEC for preparedness activities.

26) National Hydrologic Warning Council (NHWC) – provides feedback on NOAA river and flood forecasts, including the next generation of hydrologic products and information with AHPS.

27) Association of State Floodplain Managers (ASFPM) – comprised of professionals who partner with NOAA on flood plain management, flood hazard mitigation, the National Flood Insurance Program, and flood preparedness, warning and recovery.

28) American Meteorological Society (AMS) – partners with NOAA on Projects ATMOSPHERE and DataStreme. Both promote studies in meteorology in elementary and secondary schools. NOAA provides the facilities and personnel to train AMS Atmospheric Education Resource Agents (AERA) who return to the community to educate local school administrators about NOAA programs. Assists NOAA in assessing customer requirements.

29) National Weather Association (NWA) – Provides NOAA with feedback on services and supports the new Customer Satisfaction Index (CSI) survey among members.

30) The Weather Channel (TWC) - delivers NWS Watches and Warnings to the public by reaching 85 million homes nation wide, and supporting local NWS outreach events and NWS awareness videos. Memorandum of understanding cements relationship.

31) AWS Convergence Technologies (AWS) – provides over 6000 school weather observations for use by NWS forecasters and numerical weather prediction computer models.

32) Storm Spotters - over 220,000 trained volunteers provide real-time reports of severe weather to local NOAA Offices to assist forecasters in making accurate warning decisions.

33) Cooperative Observing Network - over 11,000 volunteers nationwide take temperature

and precipitation measurements for the nation's climatic data base.

34) Business Advocates - NOAA field offices collaborate with local businesses (e.g., grocery stores, home improvement stores, etc.) to promote weather safety at the "grass roots" level. As an example, oil companies in Houston take turns supporting NOAA hurricane preparedness in the Houston metropolitan area.

35) Academia – Universities assist NOAA in developing and validating new services. Examples: University of Delaware (Heat Health), Indiana University Purdue University in Indianapolis (IUPUI) (wind chill), University of Missouri (wind chill).

6. END USERS OR BENEFICIARIES OF PROGRAM

- Public – Warnings and forecasts for extreme events allow the public to take protective action for themselves and their possessions while enabling them to make timely decisions concerning any weather and water sensitive activities. Preparedness information allows the public to determine their personal risk for various events, create preparedness plans on how to respond to extreme events, and make decisions on how to mitigate the impact of potential extreme events.
- Federal, state, and local emergency management including state and local officials – Warnings and forecasts for extreme events including quantification of forecast uncertainty allow emergency managers and government officials to order evacuations, declare states of emergency, preposition response assets, and redistribute critical environmental information. Environmental data allows them to develop all hazard preparedness plans including vulnerability analyses, evacuation plans, building codes, and land use plans.
- Media – Serve as our partners in the warning process by redistributing warnings and forecasts. Guidance forecasts and diagnostic information enables them to better understand and communicate weather and water information to the public.
- Weather and Water information providers – Use LFW environmental information and tailor it to specific clients according to their needs. LFW information allows businesses to grow their markets.
- Weather sensitive businesses – Use LFW information, including tailored information from their own weather services or from weather information providers, to redirect business operations to account for weather and water events that could affect them either positively or negatively.
- Other Federal agencies – Rely on LFW as the sole official source of weather and water information. The military uses LFW information in a complimentary way and is moving toward the idea of using their services for theater and problem specific information.
- Academia – Rely on LFW observational and numerical model data for their research. Local institutions partner with local LFW offices to help focus applied research.

Appendix A

Additional Program Requirement Drivers

Requirement Drivers

The Reorganization Plan No. 2 of 1965, Citation 3 CFR May 13, 1965 Section 3 established the Environmental Science Services Administration by consolidating the duties of the Weather Bureau and the Coast and Geodetic Survey within the Department of Commerce.

NOAA came into existence with Reorganization Plan No. 4 of 1970 to; achieve a more comprehensive understanding of oceanic and atmospheric phenomena, facilitate the cooperation between public and private interests, exercise leadership in developing a national oceanic and atmospheric program of research and development, and to coordinate its own scientific and technical resources with the technical and operational capabilities of other government agencies and private institutions essential for the efficient operation of our nations' transportation, agriculture, and security systems.

United States Code Title 49 Chapter 44720: "The Administrator of the Federal Aviation Administration shall make recommendations to the Secretary of Commerce on providing meteorological services necessary for the safe and efficient movement of aircraft in air commerce. In providing the services, the Secretary shall cooperate with the Administrator and give complete consideration to those recommendations…."

International and Interagency Agreements

World Meteorological Organization (WMO) Technical Document WMO-TD No.494, Report No. TCP-30, Regional Association IV Hurricane Operational Plan, 2003 Edition, Section 2.1 Responsibilities of Members, states: "The area of responsibility of RSMC [Regional Specialized Meteorological Center] Miami [National Hurricane Center] for issuing tropical and subtropical cyclone advisories is the North Atlantic Ocean, the Caribbean Sea, Gulf of Mexico, North Pacific Ocean eastward from 140W." Brackets added for clarification

World Meteorological Organization, Intergovernmental Oceanographic Commission, United Nations Environment Program, and International Council for Science look to NOAA for support of the Global Climate Observing System

Title 7, Article VII, of the Compact of Free Association requires the NWS to issue forecasts and warnings for specific Pacific Islands.

NWS agreement (10) with the Caribbean Hurricane Upper Air System (CHUAS) countries.

FEMA's FRERP. FEMA's Federal Radiological Emergency Response Plan (FRERP) – May 1996 tasks the Department of Commerce to "Prepare operational weather forecasts tailored to support emergency response actions…" and "Prepare and disseminate predictions of plume trajectories, dispersion, and deposition."

NCEP Airforce MOU. Memorandum of Understanding (MOU) between the National Centers for Environmental Prediction (NCEP) and the Air Force establishes backup responsibilities for both organizations for numerical modeling and prediction.

BLM Interagency Agreement. Interagency agreement between the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, National Park Service of the United States Department of the Interior, and the Forest Service of the United States Department of Agriculture identifies the National Weather Service of the United States Department of Commerce as the official source for meteorological information.

Corps of Engineers Interagency Cooperation. Interagency Cooperation with the U.S. Army Corps of Engineers, U.S. Department of Interior, U.S. Department of Agriculture, U.S. Bureau of Reclamation; and the National Aeronautics and Space Administration, assigns NOAA the responsibility for collecting climate, weather, and snow data and providing river level and flood

forecasts and flash-flood warnings.

The National Search and Rescue plan, 1999, requires NWS, acting for NOAA to support marine search and rescue efforts

DOD and DOT Interagency Agreement. Interagency agreement with the Department of Defense and the Department of Transportation designating NOAA as the maintenance, depot repair, and logistics control point for the tri-agency Automated Surface Observing System and tri-agency weather radar program.

Other Drivers

Communication of Emergency Public Warnings: A Social Science Perspective and State of the Art Assessment. Dennis Mileti and John Sorenson. Oak Ridge National Laboratory. August, 1990. This work outlined the concept of an Integrated Warning System from a social science perspective. NOAA has become a recognized world leader in early warning systems by incorporating social science into our warning processes.

Office of the Federal Coordinator for Meteorology (established by Public Law 87-843) operations plans task NOAA to work in a complimentary manner with other agencies regarding environmental information:

- National Severe Local Storms Operations Plan – May 2001
- National Winter Storm Operations Plan – November 2000
- National Hurricane Operations Plan – May 2003
- Federal Plan for Meteorological Services and Supporting Research – June 2002
- Environmental Support Plan for Homeland Security – under development

The National Academies bring together committees of experts in all areas of scientific and technological endeavor. These experts serve pro bono to address critical national issues and give advice to the federal government and the public. Four organizations comprise the Academies: the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine and the National Research Council. The following publications make recommendations to NOAA and serve as drivers for the LFW program:

- Completing the Forecast: Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts
- Communicating Uncertainties in Weather and Climate Information: A Workshop Summary
- Facing Hazards and Disasters: Understanding Human Dimensions
- Successful Response Starts with a Map: Improving Geospatial Support for Disaster Management
- Flash Flood Forecasting Over Complex Terrain: With an Assessment of the Sulphur Mountain NEXRAD in Southern California
- Environmental Data Management at NOAA: Archiving, Stewardship, and Access
- Where the Weather Meets the Road: A Research Agenda for Improving Road Weather Services
- Fair Weather: Effective Partnerships in Weather and Climate Services
- Weather Forecasting Accuracy for FAA Traffic Flow Management: A Workshop Report
- Weather Radar Technology Beyond NEXRAD

Appendix B

Program Capabilities Supporting Mission Requirements

NOAA shall take observations necessary for forecasting weather and water events, issuing warnings for extreme events, and recording the nation's climate conditions.

- Observe the Atmosphere – LFW operates a mix of weather radars, radiosondes, and wind profilers as well as a contract for lightning data to diagnose atmospheric conditions toward the issuance of warnings and forecasts.
- Observe the Land Surface – LFW operates the Automated Surface Observing System (ASOS) and the legacy cooperative observer network to diagnose surface weather and water conditions for the issuance of warnings and forecasts and to define climatic conditions.

NOAA shall generate local forecasts and warnings for weather and water events and for the impact of weather events on technological hazards.

- Produce Central Forecast Guidance – LFW operates three NCEP service centers that take raw numerical model output and combine it with the full suite of observational data to provide national level forecasts used by NOAA and its customers. The Storm Prediction Center issues mesoscale guidance forecasts for all hazards as well as tornado and severe thunderstorm watches. The Tropical Prediction Center issues forecasts for the tropics as well as hurricane and tropical storm watches and warnings. The Hydrometeorological Prediction Center issues quantitative precipitation forecasts supporting flood warnings, water resource decisions, and winter storm warnings as well as guidance predictions for sensible weather elements out to 7 days.
- Produce Local Forecasts and Warnings – LFW operates 122 Weather Forecast Offices, 19 Weather Service Offices, and 2 data collection offices which combine observations, numerical model data, and central guidance to issue warnings; forecasts; and critical weather, water, and climate forecasts to their local constituents.
- Synthesize Environmental Information for Predictions – LFW operates information technology systems that allow forecasters access to the full suite of NOAA environmental information. Workstations provide; data ingest, data synthesis, local model execution, visualization strategies supporting diagnosis and prognosis, and forecast generation tools.
- Enhance Human Capital – LFW operates continuous learning activities so personnel make the best use of science and technology in the forecast process. Training assists personnel in maintaining LFW observational and IT systems. Leadership training helps personnel reach their full potential in support of NOAA's mission.
- Manage Daily Operations – LFW operates national and regional headquarters structures to ensure operational policies reflect NOAA's strategies and field offices execute policies and procedures to best support NOAA's mission
- Assess Performance - LFW verifies critical warning and forecast services to assess accuracy and timeliness. Service assessments following extreme events highlight successes and seek opportunities for improvement. Customer relations software and satisfaction surveys engage customers to define their service expectations.
- Outreach and Education – LFW educates NOAA's partners in the warning process to assist them in making best use of services. LFW and its partners educate the public on environmental issues and advises them on how to respond upon receipt of a warning or when confronted with a hazard

NOAA shall issue local forecasts and warnings and make available environmental information in an open and unrestricted manner.

- Disseminate Critical Environmental Information – LFW operates various technologies to disseminate critical environmental forecasts and warnings directly to the public and to our media and private sector partners for further redistribution and enhancement. LFW operates telecommunications centers to collect and redistribute observations, forecasts, and warnings worldwide as well as to feed NOAA's dissemination pathways